

POSITIONS AND AREAS OF SUN SPOTS—Continued

PROVISIONAL SUN-SPOT RELATIVE NUMBERS, MAY 1935

Date	Eastern standard time	Heliographic			Area		Total area for each day	Observatory
		Diff. in longitude	Longitude	Latitude	Spot	Group		
May 29	11 20	-80.0 -60.0 -47.0	279.5 299.5 312.5	+26.5 +17.0 -29.5	46 46 93			U. S. Naval.
May 30	9 20	-70.0	277.5	+27.0	57			Mount Wilson.
May 31	13 14	-48.0 -33.0 -56.0 -19.0	299.5 314.5 276.0 313.0	+17.0 -27.0 +26.5 -30.0	21 157 116 154		235 270	U. S. Naval.

Mean daily area for 29 days, 232.

(Dependent alone on observations at Zurich and its station at Arosa)

[Data furnished through the courtesy of Prof. W. Brunner, Eidgen. Sternwarte, Zurich, Switzerland]

May 1935	Relative numbers	May 1935	Relative numbers	May 1935	Relative numbers
1	17	11	aa 46	21	0
2	26	12	41	22	0
3	Mc 46	13	41	23	0
4	b 56	14	49	24	17
5	de 56	15	32	25	7?
6	56	16		26	d 8
7	Ec 56	17	8	27	8
8	62	18	0	28	8
9	54	19	0	29	d 17
10	41	20	0	30	30
				31	38

Mean, 30 days=27.3.

a=Passage of an average-sized group through the central meridian.

b=Passage of a large group or spot through the central meridian.

c>New formation of a center of activity: E, on the eastern part of the sun's disk; W, on the western part; M, in the central zone.

d=Entrance of a large or average-sized center of activity on the east limb.

AEROLOGICAL OBSERVATIONS

[Aerological Division, D. M. Little, in Charge]

By L. T. SAMUELS

At those stations with a sufficient period of record for the determination of approximate normals, free-air temperatures during May averaged below normal, except at Pensacola and in the higher levels at Sunnyvale and San Diego. (See table 1.) As during April, mean free-air temperatures for May at Seattle and Spokane were higher than those at Boston at and below the 3,000-meter level, but above this level the temperatures at Boston were increasingly the higher.

Free-air relative humidities averaged slightly above normal at most stations, with the largest departures at Omaha. The free-air relative humidities averaged highest over the northern Plateau region.

The resultant winds for the month were in general as follows (see table 2): At the 1,000-meter level the directions contained a greater northerly component than normal over the northeastern section and Lake region, with velocities mostly below normal; elsewhere the directions were mostly close to normal, with velocities preponderantly above normal over the southeastern section. At the 4,000-meter level the directions were generally close to normal, with a slight excess of northerly components at most of the northern stations and on the Pacific coast; velocities were mostly above normal.

TABLE 1.—Mean free-air temperatures and relative humidities obtained by airplanes during May 1935

TEMPERATURE (° C.)

Stations	Altitude (meters) m. s. l.												Number of observations						
	Surface		500		1,000		1,500		2,000		2,500		3,000		4,000		5,000		
	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	
Billings, Mont. ¹ (1,088 m) -----	6.7				7.9		5.6		2.0	-1.6	-8.2	-15.0	-2.7	31					
Boston, Mass. ¹ (6 m) -----	9.4	-4.1	7.5	-3.9	4.5	-4.5	1.6	-4.7	-0.5	-4.5	-2.3	-3.6	-8.9	-2.9	-14.8	-2.7	15		
Cheyenne, Wyo. ¹ (1,873 m) -----	4.1						3.8		2.2	-0.4	-6.7	-13.4	-2.7	29					
Fargo, N. Dak. ¹ (274 m) -----	5.8		8.9		7.2		4.1		0.9	-2.0	-4.3	-9.0	-15.0		31				
Kelly Field (San Antonio), Tex. ³ (206 m) -----	18.7		19.0		19.0		18.0		15.4		12.9		10.0		3.2	-4.2	26		
Lakehurst, N. J. ⁴ (3 m) -----	8.8		10.0		7.9		5.5		3.0		0.8	-1.2	-5.1	-10.0	-10.0	-10.0	26		
Maxwell Field (Montgomery), Ala. ³ (52 m) -----	19.8		20.6		17.5		14.1		11.6		8.9		5.7	-0.8	-7.0	-7.0	30		
Mitchel Field (Hempstead, L. I.), N. Y. ³ (29 m) -----	10.3		11.7		8.7		5.8		3.6		1.2	-0.9	-6.0	-12.3	-12.3	-12.3	29		
Murfreesboro, Tenn. ¹ (174 m) -----	14.8		16.2		15.3		12.3		10.1		7.5		4.5	-1.7	-8.0	-8.0	31		
Norfolk, Va. ⁴ (10 m) -----	15.2	-2.7	15.2	-1.9	13.2	-2.0	11.0	-1.5	8.4	-1.3	5.8	-1.1	3.6	-0.5	-7.3	-7.3	28		
Oklahoma City, Okla. ¹ (391 m) -----	15.5		15.3		14.9		13.7		11.8		8.8		5.2	-2.8	-10.9	-10.9	29		
Omaha, Nebr. ¹ (300 m) -----	10.0	-2.9	10.6	-3.1	10.2	-3.5	8.1	-3.5	5.7	-3.6	3.3	-3.2	0.9	-2.6	-4.7	-11.4	-1.1	31	
Pearl Harbor, Territory of Hawaii ¹ (6 m) -----	23.2	+0.6	21.6	+0.8	18.8	+0.6	16.3	+0.3	13.8	+0.9	11.3	+1.0	9.1	+1.4	3.6	+1.6	-2.4	+2.1	30
Pensacola, Fla. ⁴ (24 m) -----	15.2	-2.4	12.2	-1.8	11.5	-2.2	10.8	-1.7	11.0	-0.4	8.9	+0.1	6.0	-0.1	+0.1	-6.7	+0.1	30	
Scott Field (Belleville), Ill. ³ (135 m) -----	12.0		14.8		13.0		10.2		7.6		5.6		3.1	-2.8	-9.1	-9.1	-9.1	22	
Seattle, Wash. ⁴ (25 m) -----	8.1	-5.0	7.4	-2.8	6.4	-1.6	4.1	-1.3	1.3	-1.3	-1.2	-3.7	-1.0	-9.3	-0.7	-15.3	-0.7	28	
Selfridge Field (Mount Clemens), Mich. ³ (177 m) -----	6.9		9.6		7.2		5.0		3.0		1.2	-0.8	-6.5	-13.4	-13.4	-13.4	31		
Spokane, Wash. ⁴ (696 m) -----	13.5				10.8		7.8		4.1		0.4	-3.4	-9.8	-17.0	-17.0	-17.0	31		
Sunnyvale, Calif. ⁴ (10 m) -----	14.4	-1.5	10.8	-1.3	10.2	-0.4	11.0	+1.1	8.8	+1.1	6.0	+1.2	3.1	+1.3	3.5	+1.7	-11.3	+1.7	25
Washington, D. C. ⁴ (13 m) -----	10.9	-5.7	10.9	-4.0	9.8	-3.2	7.4	-3.1	5.4	-2.7	3.4	-2.1	1.2	-1.7	-3.4	-1.0	-9.7	-1.0	27
Wright Field (Dayton), Ohio ³ (244 m) -----	9.5		11.6		11.0		8.7		6.3		3.7		1.0	-4.2	-10.6	-10.6	-10.6	29	

TABLE 1.—Mean free-air temperatures and relative humidities obtained by airplanes during May 1935—Continued
RELATIVE HUMIDITY (PERCENT)

Stations	Altitude (meters) m. s. l.																Number of observations		
	Surface		500		1,000		1,500		2,000		2,500		3,000		4,000				
	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal			
Billings, Mont.	82		60	-1	60	+2	61		59		64		68		63		61		
Boston, Mass.	62	-3	60	-1	60	+2	60	+2	61	+3	57	+2	52	-2	47	-1	46	-1	
Cheyenne, Wyo.	85								82		72		68		64		62		
Fargo, N. Dak.	79		64		58		60		61		58		51		42		40		
Kelly Field (San Antonio), Tex.	95		83		69		53		45		46		43		42		41		
Lakehurst, N. J.	85		61		58		60		61		59		54		46		43		
Maxwell Field (Montgomery), Ala.	84		68		70		66		52		43		41		36		29		
Mitchel Field (Hempstead, L. I.), N. Y.	76		59		58		60		60		57		53		49		45		
Murfreesboro, Tenn.	89		76		72		74		64		58		57		55		52		
Norfolk, Va.	76	+3	65	+1	62	+3	60	+3	61	+5	61	+6	64	+2	46	+2	43	+2	
Oklahoma City, Okla.	86		82		66		59		50		45		45		50		52		
Omaha, Nebr.	88	+10	82	+9	74	+9	70	+8	72	+13	69	+13	65	+12	56	+6	54	+6	
Pensacola, Fla.	85	+4	81	+5	76	+7	70	+7	60	+3	51	0	47	+1	38	+2	33	+2	
San Diego, Calif.	77	+7	82	+5	72	+8	62	+9	45	+5	37	+3	34	+4	30	+3	28	+3	
Scott Field (Belleville), Ill.	87		62		61		62		61		55		51		54		49		
Seattle, Wash.	84	+11	80	+6	76	+5	74	+5	74	+7	69	+7	64	+7	57	+2	54	+2	
Selfridge Field (Mount Clemens), Mich.	80		61		61		59		54		50		44		40		37		
Spokane, Wash.	51				52		52		52		55		58		54		41		
Sunnyvale, Calif.	70	+5	74	+3	66	+1	45	-6	38	-7	36	-7	36	-6	33	-4	33	-4	
Washington, D. C.	75	+7	64	+2	60	+2	61	+3	59	+2	56	+1	54	+2	48	+1	49	+1	
Wright Field (Dayton), Ohio	84		68		61		62		58		55		57		57		54		

Late reports for April 1935

TEMPERATURE (°C.)

Pearl Harbor, Territory of Hawaii ¹	19.9	-3.5	18.7	-1.4	15.7	-0.7	12.9	-0.8	11.2	-0.1	10.4	+0.3	8.9	+0.3	4.5	-0.5	-1.9	-0.5	30
--	------	------	------	------	------	------	------	------	------	------	------	------	-----	------	-----	------	------	------	----

RELATIVE HUMIDITY (PERCENT)

Pearl Harbor, Territory of Hawaii ¹	75	+10	74	+3	74	-2	72	-1	64	-4	50	-5	40	-2	27	+1	24	+1	----
--	----	-----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	------

Observations taken about 5 a. m., 75th meridian time, except along the Pacific coast and Hawaii, where they are taken at dawn.

Note.—The departures are based on "normals" covering the following number of observations made during the same month in previous years, including the current year Boston, 73; Norfolk, 129; Omaha, 124; Pensacola, 166; San Diego, 144; Seattle, 67; Sunnyvale, 65; Washington, 193; Pearl Harbor (April), 82.

TABLE 2.—Free-air resultant winds (meters per second) based on pilot-balloon observations made near 6 a. m. (E. S. T.) during May 1935
[Wind from N=360°, E=90°, etc.]

Altitude (m) m. s. l.	Albuquerque, N. Mex. (1,554 m)		Atlanta, Ga. (309 m)		Billings, Mont. (1,088 m)		Boston, Mass. (15 m)		Cheyenne, Wyo. (1,873 m)		Chicago, Ill. (192 m)		Cincinnati, Ohio, (153 m)		Detroit, Mich. (204 m)		Fargo, N. Dak. (274 m)		Houston, Tex. (21 m)		Key West, Fla. (11 m)		Medford, Oreg. (410 m)		Murfreesboro, Tenn. (180 m)	
	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity
Surface	95	0.6	260	0.8	342	1.2	292	2.4	277	3.1	63	1.8	55	0.8	307	1.1	49	0.5	127	1.6	125	2.8	261	0.6	196	0.8
500	230	2.5	309	6.5					70		2.3	1.8	357	2.4	93	1.4	164	7.0	124	5.0	282	1.1	211	4.7		
1,000	234	4.4	307	7.2					92	1.4	282	1.5	10	2.0	80	0.2	170	5.7	117	3.9	318	1.8	217	6.1		
1,500	244	4.9	168	7.5					217	0.2	271	3.7	331	3.3	150	0.8	182	4.5	109	1.8	350	0.9	228	5.3		
2,000	255	1.7	258	5.0	218	1.1	269	4.3	258	0.9	276	5.2	319	5.8	135	0.8	199	3.1	90	0.8	14	1.9	268	4.0		
2,500	263	4.4	258	5.4	264	2.0	299	11.4	277	5.6	2	1.7	295	5.4	309	7.7	136	1.3	215	3.4	78	0.4	343	2.4		
3,000	274	6.9	259	4.2	291	3.2	297	11.1	295	5.5	324	2.6	302	5.6	310	8.7	96	0.2	242	4.7	209	0.6	301	4.1		
4,000	258	7.5	268	3.6	280	6.1	295	11.0	290	7.6	328	3.2	302	12.6	307	9.0	282	3.2	263	4.9	265	3.5	319	6.6		
5,000	242	12.0			268	7.7	293	11.2	317	4.6			298	8.5	285	5.6	292	8.6			320	10.6				

Altitude (m) m. s. l.	Newark, N. J. (14 m)		Oakland, Calif. (8 m)		Oklahoma City, Okla. (402 m)		Omaha, Nebr. (306 m)		Pearl Harbor, Territory of Hawaii ¹ (68 m)		Pensacola, Fla. ¹ (24 m)		St. Louis, Mo. (170 m)		Salt Lake City, Utah (1,294 m)		San Diego, Calif. (15 m)		Sault Ste. Marie, Mich. (198 m)		Seattle, Wash. (14 m)		Spokane, Wash. (603 m)		Washington, D. C. (10 m)	
	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity
Surface	315	1.5	237	0.5	153	1.2	44	2.7	157	1.9	145	0.8	157	1.7	171	0.7	331	0.9	140	1.4	110	0.5	348	0.6	300	2.9
500	324	4.8	314	2.4	190	3.9	72	1.5	60	6.4	151	3.0	170	2.4	226	1.2	31	3.9	112	0.1	295	4.0	301	2.7		
1,000	327	4.9	350	5.4	212	8.5	162	2.4	48	3.3	190	2.4	224	4.3	301	2.7	19	4.2	305	0.9	235	0.7	336	2.5		
1,500	302	5.1	359	5.2	230	6.8	167	1.7	82	3.8	216	3.6	243	4.9	167	1.5	333	5.4	345	5.2	321	2.1	274	1.2		
2,000	273	7.6	357	5.2	230	7.7	230	1.9	33	0.9	246	3.8	270	3.7	212	0.6	339	7.0	302	2.2	285	1.8	294	7.6		
2,500	276	10.6	354	6.8	246	10.3	266	2.6	25	0.9	276	5.4	260	4.6	270	1.3	337	9.1	292	3.0	297	10.1	301	5.8		
3,000	291	14.1	341	8.0	260	9.0	263	4.5	226	1.8	284	6.9	262	7.7	206	2.0	339	7.3	302	5.9	287	5.2	301	11.5		
4,000			339	11.0	276	10.6	257	7.6			281	8.1			306	4.8			308	7.5	314	7.1				
5,000					247	8.0																				

¹ Navy stations.